Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

This certificate is issued to:

PRODUCER ABB Oy - BAU Drives

PLACE OF PRODUCTION P.O. Box 184
Hiomotie 13
FIN-00381 Helsinki
Finland

DESCRIPTION Electronic Frequency Converter

TYPE ACS800LC with option C121 and/or C132 when applicable

APPLICATION Marine and offshore use in environmental categories ENV1 and ENV2 as defined in Lloyd's Register Test Specification No. 1: 2002

SPECIFICATIONS Manufacturer's Specification.

RATINGS

Type	Nominal Current Rating	Light Overload Current Rating	Heavy Overload Current Rating	Mains Supply Voltage Rating Frequency 48 ~ 63 Hz
ACS800-304LC	572 ~ 898 A	549 ~ 862 A	457 ~ 719 A	380 ~ 690 V ±10%
ACS800-704LC	1143 ~ 1796 A	1097 ~ 1724 A	914 ~ 1437 A	380 ~ 690 V ±10%
ACS800-307LC	572 ~ 5000 A	549 ~ 4800 A	457 ~ 4000 A	380 ~ 690 V ±10%
ACS800-507LC	1143 ~ 5000 A	1097 ~ 4800 A	914 ~ 4000 A	380 ~ 690 V ±10%
ACS800-1107LC	1595 ~ 5000 A	1531 ~ 4800 A	1276 ~ 4000 A	380 ~ 690 V ±10%
ACS800-1207LC	2126 ~ 3200 A	2041 ~ 3072 A	1701 ~ 2560 A	380 ~ 690 V ±10%
ACS800-104LC	176 ~ 889 A	169 ~ 853 A	132 ~ 665 A	380 ~ 415 V ±10%

Certificate No. 07/00032

Issue Date 03 June 2007

Expiry Date 02 June 2012

Sheet 1 of 2

M. Al Rufaie

M.H.A. Rufaie
London Design Support Services
Lloyd's Register EMEA

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register Group'. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

LLOYD'S REGISTER GROUP PAPER (01/2005)

Lloyd's Register

RATINGS (cont.)

Type	Nominal Current Rating	Light Overload Current Rating	Heavy Overload Current Rating	Mains Supply Voltage Rating Frequency 48 ~ 63 Hz
ACS800-104LC	138 ~ 840 A	132 ~ 806 A	103 ~ 628 A	380 ~ 500 V ±10%
ACS800-104LC	83 ~ 583 A	79 ~ 560 A	62 ~ 436 A	525 ~ 690 V ±10%
ACS800-107LC	176 ~ 5067 A	169 ~ 4865 A	132 ~ 3790 A	380 ~ 415 V ±10%
ACS800-107LC	138 ~ 4788 A	133 ~ 4596 A	103 ~ 3581 A	380 ~ 500 V ±10%
ACS800-107LC	83 ~ 5540 A	79 ~ 5319 A	62 ~ 4144 A	525 ~ 690 V ±10%
ACS800-07LC	563 ~ 5067 A	540 ~ 4865 A	421 ~ 3790 A	380 ~ 415 V ±10%
ACS800-07LC	546 ~ 4788 A	524 ~ 4596 A	408 ~ 3581 A	380 ~ 500 V ±10%
ACS800-07LC	583 ~ 5540 A	560 ~ 5319 A	436 ~ 4144 A	525 ~ 690 V ±10%

Braking Chopper	Nominal Current Rating	Duty Cycle (1/5 min)	Duty Cycle (10/60 s)	Mains Supply Voltage Rating Frequency 48 ~ 63 Hz
NBRW-669C	414 A	267 A	361 A	380 ~ 690 V ±10%
ACS800-607LC	414 ~ 2484 A	267 ~ 1602 A	361 ~ 2166 A	380 ~ 690 V ±10%

Liquid Cooling Unit	Cooling Capacity
ACS800-1007LC	Cooling 70kW / 195 kW

OTHER CONDITIONS Installation of this equipment for marine applications in LR Classed ships is to be in accordance with the LR Rules and Regulations for Classification of Ships

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. 07/00032 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No. 07/00032

Issue Date 03 June 2007

Expiry Date 02 June 2012

Sheet 2 of 2

M. Al Rufaie

M.H.A. Rufaie
London Design Support Services
Lloyd's Register EMEA

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register Group'. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

LLOYD'S REGISTER GROUP PAPER (01/2005)

Lloyd's Register EMEA (London Office)
LONDON DESIGN SUPPORT SERVICES
71 Fenchurch Street, London, EC3M 4BS
Telephone 020 7709 9166 Fax 020 7488 4796
Email tad@lr.org

Document number
07/00032

Issue number
1

DESIGN APPRAISAL DOCUMENT

Date	Quote this reference on all future communications
03 June 2007	LDSS/PAS/TA/W0216952/MHR/O- 81987

LLOYD'S REGISTER TYPE APPROVAL SYSTEM, 2002.

Issued to: ABB OY - BAU DRIVES
for: ELECTRONIC FREQUENCY CONVERTER
Type: ACS800LC
TYPE APPROVAL CERTIFICATE No. 07/00032

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register Type Approval System, 2002 and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

Request form	14.12.2005
ABB Appendix A	08.12.2005
ABB letter	16.03.2006
LR Helsinki email with attachment	21.05.2007
Functional description (3AEF 6889 2988 – Rev. A)	15.03.2007
Type code description (3AEF 64564633 – Rev. A)	12.05.2006
Technical specification (68892970 – Rev. A)	15.03.2007
Hardware Manual Supply units (3AFE68715474 Rev. A / EN)	04.12.2006
Firmware Manual (3AFE68746299 Rev. A / EN)	07.11.2006
Hardware Manual Inverter Units (3AFE68715491 / EN)	16.03.2007
User Manual Liquid Cooling Unit (3AFE68621101 Rev. A / EN)	24.10.2006
ABB industrial drives (technical catalogue 3AFE68620902 Rev. B / EN)	24.10.2006
ABB Safety Instruction (3AFE68715318 Rev. A / EN)	30.08.2006
ABB Planning the Electrical Installation (3AFE68715423 Rev. B / EN)	28.09.2006
ABB Mechanical Installation (3AFE68715466 Rev. A / EN)	30.08.2006

Parts Lists

Supply unit (68892996 – Rev. A)	15.03.2007
Drive unit (68892996 – Rev. A)	15.03.2007
Braking unit (68892996 – Rev. A)	15.03.2007
Liquid cooling unit (68892996 – Rev. A)	15.03.2007

Drawings

Assembly drawings – Supply unit (90 sheets, Revs. E, B, C, K, D, C, A)	(Several Dates)
Assembly drawings – Drive unit (56 sheets, Revs. E, B, C, D)	(Several Dates)
Assembly drawings – Braking unit (18 sheets, Revs. B, A)	(Several Dates)
Assembly drawings – Liquid cooling unit (33 sheets, Revs. F)	(Several Dates)
Circuit Diagrams – Supply unit (85 sheets, Revs. B, A)	(Several Dates)
Circuit Diagrams – Drive unit (38 sheets, Revs. B, C, A)	(Several Dates)
Circuit Diagrams – Braking unit (5 sheets, Rev. A)	(Several Dates)
Circuit Diagrams – Liquid cooling unit (3 sheets, Rev. A)	(Several Dates)

Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register Group'. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

LLOYD'S REGISTER GROUP PAPER (01/2005)

Lloyd's Register EMEA (London Office)
LONDON DESIGN SUPPORT SERVICES
71 Fenchurch Street, London, EC3M 4BS
Telephone 020 7709 9166 Fax 020 7488 4796
Email tad@lr.org

Document number
07/00032

Issue number
1

DESIGN APPRAISAL DOCUMENT

Date	Quote this reference on all future communications
03 June 2007	LDSS/PAS/TA/W0216952/MHR/O- 81987

TEST REPORTS

Test specification (3AFE – Rev. A)	13.09.2006
List of tests (3AFE 68893003 – Rev. A)	11.03.2007
No. 3AFE 00530116 – Rev. A	11.08.2006
No. 3AFE 00529870 – Rev. A)	11.08.2006
No. 3AFE 6874 9671 – Rev. A	06.10.2006
No. 3AFE 6874 9662 – Rev. A	06.10.2006
No. 3AFE 00486675 – Rev. A	25.09.2006
No. 3AFE 005483 – Rev. A	15.12.2006
No. 3AFE 0054583 – Rev. A	24.11.2006
No. 3AFE 64700316 – Rev. A	05.02.2003
VTT No. TUO26-043751	10.02.2004
No. 3AFE 6873 8377 – Rev. A	03.07.2006
No. 3AFE 68763096 – Rev. A	03.07.2006
No. 3AFE 64312341 – Rev. A	18.09.2006
VTT No. TUO26-056470	28.11.2005
No. 3AFE 68895481 – Rev. A	15.03.2007
No. 3AFE 00530150 – Rev. A	11.08.2006
No. 3AFE 00545103 – Rev. A	27.11.2006
No. 3AFE 00573645 – Rev. A	01.02.2007
ABB List of Type Tests ACS800LC (Appendix C)	08.12.2005
BVQi Certificate No. 105480	22.02.2002

Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the Lloyd's Register Type Approval System Procedure.

M. Al Rufaie

M.H.A. RUFAIE
Senior Electrical Engineer
Product-Approval / London Design Support Services
Tel: +44 (0) 20 7423 1849 (*Direct line*)
Email:product-approval@lr.org
Web: www.lr.org

Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register Group'. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

LLOYD'S REGISTER GROUP PAPER (01/2005)

Part 2
Electronic Frequency Convertor (Part 2)

Producer/Licence No.	Type	Technical Details				Category/ Additional Tests	Remarks	Cert. No.
		Nominal Current Rating @ 45°C	Light Overload Current Rating @ 45°C	Heavy Overload Current Rating @ 45°C	Mains Supply Voltage Rating Frequency 48 ~ 63 Hz			
ABB Oy - BAU Drives, P.O. Box 184, Hiomotie 13, FIN-00381 Helsinki, Finland.	Electronic Frequency Converter. Types: ACS800LC with option C121 and/or C132 when applicable					ENV1 ENV2 (2002)	Expires: 02 June 2012 Installation of this equipment for marine applications in LR Classed ships should be in accordance with LR Rules and Regulations for Classification of Ships.	07/00032
	ACS800-304LC	572 ~ 898 A	549 ~ 862 A	457 ~ 719 A	380 ~ 690 V ±10%			
	ACS800-704LC	1143~1796 A	1097 ~ 1724 A	914 ~ 1437 A	380 ~ 690 V ±10%			
	ACS800-307LC	572 ~ 5000 A	549 ~ 4800 A	457 ~ 4000 A	380 ~ 690 V ±10%			
	ACS800-507LC	1143~5000 A	1097 ~ 4800 A	914 ~ 4000 A	380 ~ 690 V ±10%			
	ACS800-1107LC	1595~5000 A	1531 ~ 4800 A	1276 ~ 4000 A	380 ~ 690 V ±10%			
	ACS800-1207LC	2126~3200 A	2041~3072 A	1701 ~ 2560 A	380 ~ 690 V ±10%			
	ACS800-104LC	176 ~ 889 A	169 ~ 853 A	132 ~ 665 A	380 ~ 415 V ±10%			
	ACS800-104LC	138~840 A	132 ~ 806 A	103 ~ 628 A	380 ~ 500 V ±10%			
	ACS800-104LC	83 ~ 583 A	79 ~ 560 A	62 ~ 436 A	525 ~ 690 V ±10%			
	ACS800-107LC	176~5067 A	169 ~ 4865 A	132 ~ 3790 A	380 ~ 415 V ±10%			
	ACS800-107LC	138~4788 A	133 ~ 4596 A	103 ~ 3581 A	380 ~ 500 V ±10%			
	ACS800-107LC	83 ~ 5540 A	79 ~ 5319 A	62 ~ 4144 A	525 ~ 690 V ±10%			
	ACS800-07LC	563 ~ 5067 A	540 ~ 4865 A	421 ~ 3790 A	380 ~ 415 V ±10%			
	ACS800-07LC	546 ~ 4788 A	524 ~ 4596 A	408 ~ 3581 A	380 ~ 500 V ±10%			
	ACS800-07LC	583 ~ 5540 A	560 ~ 5319 A	436 ~ 4144 A	525 ~ 690 V ±10%			
	Braking Chopper		**Duty Cycle (1/5 min)**	**Duty Cycle (10/60 s)**				
	NBRW-669C	414 A	267 A	361 A	380 ~ 690 V ±10%			
	ACS800-607LC	414 ~ 2484 A	267 ~ 1602 A	361 ~ 2166 A	380 ~ 690 V ±10%			
	Liquid Cooling Unit ACS800-1007LC	**Cooling Capacity** Cooling 70kW / 195 kW						

3 JUN 2007
MHm